

DESIGN AND OPERATION OF THE LLNL SPHERE MAPPING SYSTEM\*

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Measuring capsule sphericity has become an integral part of LLNL's characterization of ICF target capsules. We have designed and built a sphere mapping system incorporating an atomic force microscope and a precision air bearing that allows us to measure circumferential traces with  $\sim 0.5 \mu\text{m}$  lateral and sub-nanometer vertical resolution. We will describe the system and discuss some of the mechanical, electronic, and software problems that had to be addressed. We will also show some of the methods we have devised through use of the sphere mapper to ease the characterization process for the operator.

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\* Work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract W-7405-ENG-48.